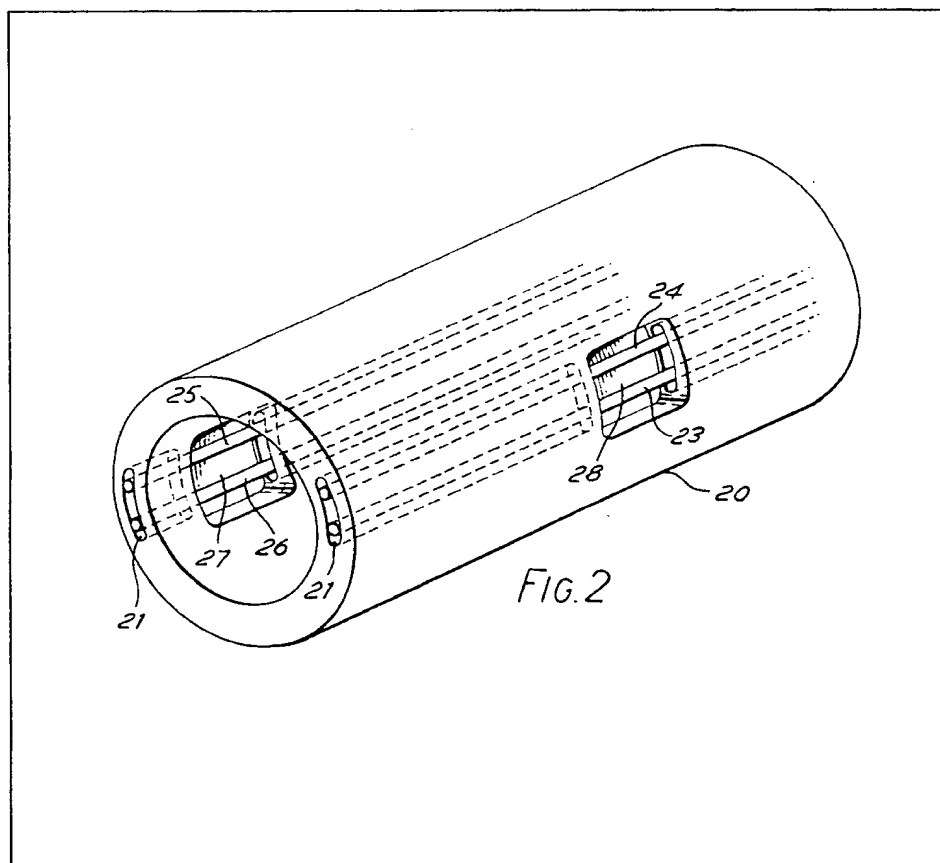


- (21) Application No 8317681  
(22) Date of filing 29 Jun 1983  
(30) Priority data  
(31) 8218998  
8219991  
(32) 1 Jul 1982  
9 Jul 1982  
(33) United Kingdom (GB)  
(43) Application published  
22 Feb 1984  
(51) INT CL<sup>3</sup>  
F16L 9/00  
(52) Domestic classification  
F2P F14  
U1S 1886 2204 F2P  
(56) Documents cited  
GB A 2064059  
GB A 2051294  
GB A 2015690  
GB 1474993  
(58) Field of search  
F2P  
(71) Applicants  
Micro Consultants  
Limited,  
(United Kingdom),  
Kenley House,  
Kenley Lane,  
Kenley,  
Surrey CR2 5YR.  
(72) Inventors  
Peter Colin Michael  
(74) Agent and/or Address for  
Service  
Matthews, Haddan and  
Co.,  
Haddan House,  
33 Elmfield Road,  
Bromley,  
Kent BR1 1SU.

(54) Cable television transmission

(57) A television transmission system employs cables 23-26 for transmitting the television signals. The cables are run for at least part of their length inside a conduit 20 of a sewerage system. The cable may be carried in ducts 21 within the wall of the conduit and portholes 27 are provided on the inner wall to aid pulling and for observation purposes. External ports 28 allow for cable entry and exit. These ports are sealed to prevent leakage from the conduit. The cables may also simply run along the inside of the conduit.

Alternative cable carrying configurations are also disclosed including the provision of a sealed liner and the employment of armoured cables within the sewerage conduit.



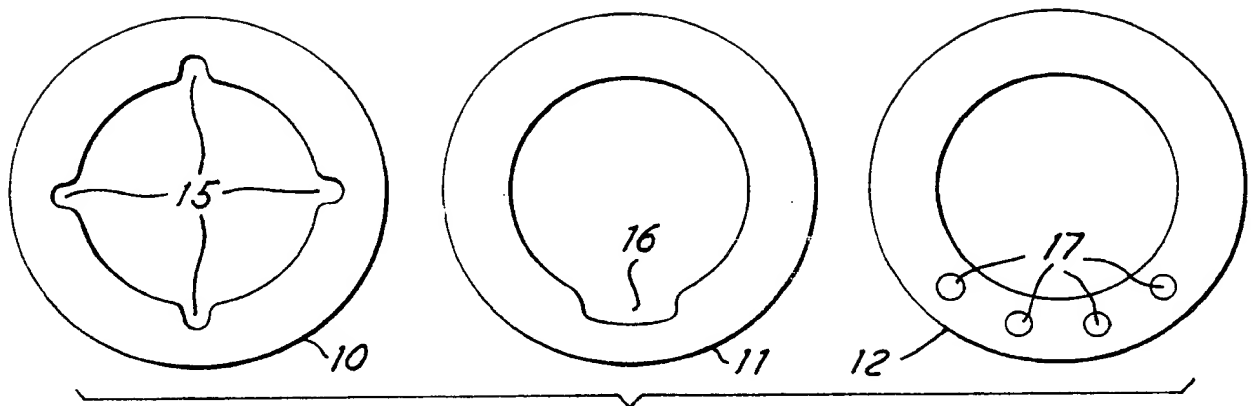


FIG. 1

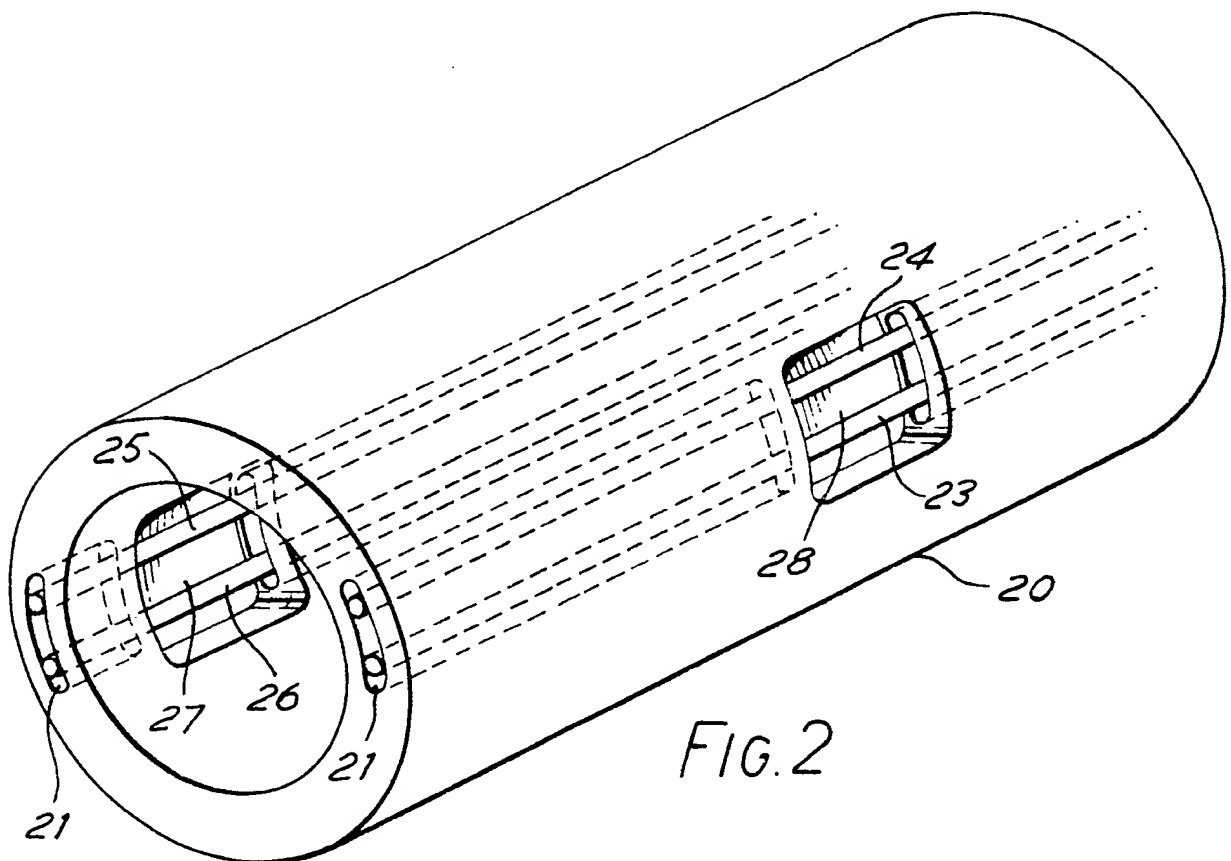
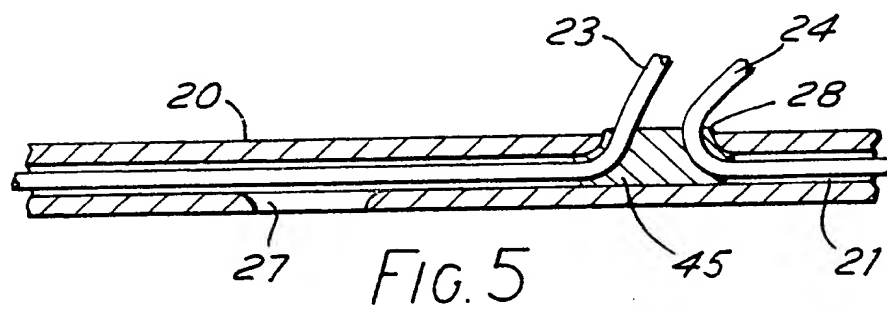
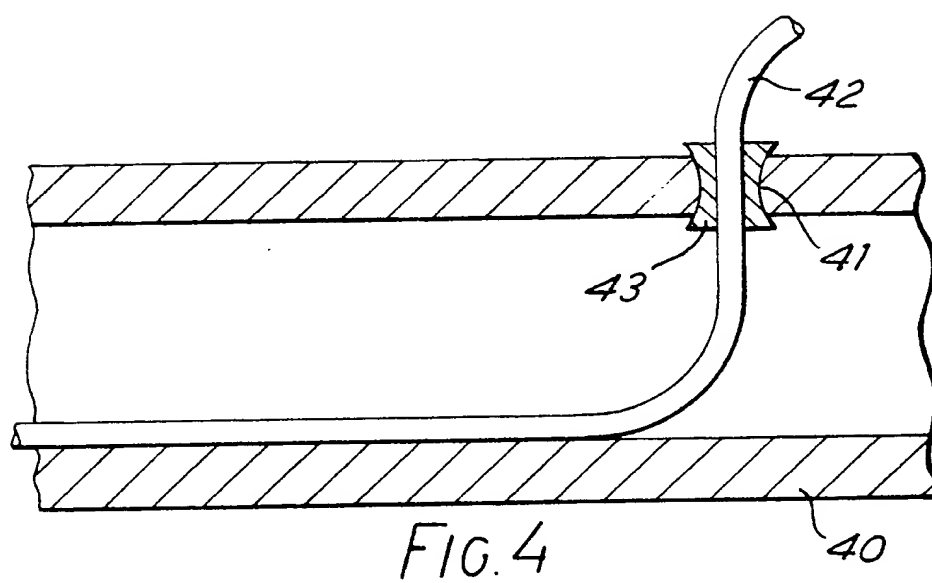
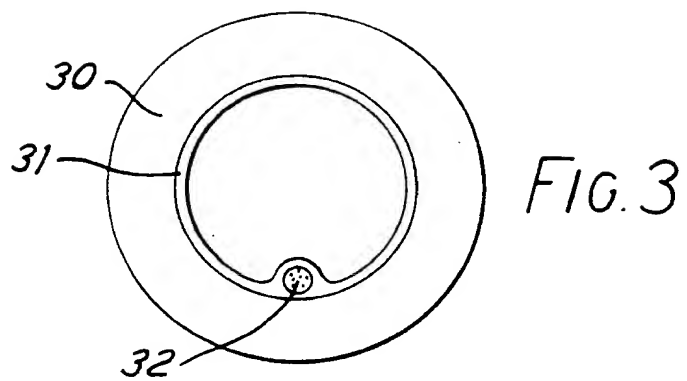


FIG. 2



## SPECIFICATION

### Cable television transmission

- 5 The invention relates to television transmission systems employing cables as the transmission medium.

Normally cables used for television have to be specially laid in the ground which can be expensive and time consuming.

- 10 and time consuming.

The present invention seeks to simplify such interconnection.

- According to the invention there is provided a television transmission system in which cable is used for transmitting the television signals, and in which said cable is housed for at least part of its length inside one or more conduits of a sewerage system.

- It will be appreciated that the cable, at its input end will be connected to a source of television signals, such as signal generator means, whilst at various points along the cable, spurs will be connected to the cable to feed the signals to receivers or groups of receivers, which will usually comprise domestic TV receivers.

- The system typically would make use of existing underground sewerage conduits so that expensive and time consuming excavation is minimised. The conduits may, however, be modified by forming apertures, with associated seals, to allow the passage of the TV cables to the consumer. Preferably the cable is suspended from the roof of the sewer pipe. The cable may be provided during manufacture with an armoured sheath which protects the cable, such sheathing may also be such as to prevent the cable from floating in the sewage should there be a possibility of this happening. An outer layer of sealing material (e.g., tough high density plastics material) is employed to prevent deterioration. One or more inner conductors carry the signals. These may be electrical or light signals so that the conductor may employ fibre optics if necessary. As the sewerage systems in the U.K. for example are under the control of only a relatively small number of authorities this would facilitate the provision of a system according to the invention. The signals from the transmission source pass to a distribution network via a distributor and each cable therefrom passes along sewer conduits from which they may branch off and connect to consumers' TV sets. Amplifiers can be employed in the network at intervals to maintain signal integrity as necessary.

- When new installations of pipes are contemplated in a sewerage system or when repairs are being undertaken, it is possible to improve the installation method by using a form of conduit specially designed to carry the electrical or fibre optic signal-carrying conductors within the wall of the conduit. A preferred arrangement is to have the cable located at the roof of the sewer pipe. To achieve this location, the cable may be suspended from the roof by various means, such as, the provision at regular intervals of a supporting hook or saddle which is mechanically attached to the existing sewer pipe roof.

In order that the present invention may be more clearly understood and readily carried into effect, several configurations in which the conduit of a sewerage system may be used to accommodate one or more cables of a TV cable transmission system in accordance with the present invention are illustrated, by way of example, in the accompanying drawings in which:

- Figure 1* shows sectional views of various conduits with provision for receiving the TV cables;

- Figure 2* shows an alternative embodiment in which a cable duct is provided within the wall of the conduit for ease of retention and the wall is provided with internal and external ports;

- Figure 3* shows a sewer conduit with an internal lining material with the TV cable sandwiched therebetween;

- Figure 4* shows one arrangement for cable entry or exit employing a rubber or plastic seal; and

- Figure 5* shows an alternative arrangement employing a sealant in the wall cavity carrying the cable.

- In *Figure 1*, several sewerage conduits 10, 11 and 12 are shown in cross section, each having recesses or ducts 15, 16 or 17 respectively in a configuration suitable for laying TV transmission cables into the wall of the respective conduit.

- There are several methods of retaining the cable in the desired position in the conduit, namely adhesive, clips or by designing the cable trough so as to retain the cable automatically. One such design is shown in *Figure 2*, where the cable trough or duct 21 is cast into the wall of the conduit 20 allowing cables 23 - 26 to be passed through the periphery of the conduit. For long sections, portholes 27 may be cast on the inner wall of the conduit to aid cable pulling and for observation purposes. External ports 28 may be provided to allow for cable entry and/or exit.

- Figure 3* shows in cross section a sewer conduit 30 using self-adhesive plastic material 31 wound in a spiral along the inside of the pipe. Machines for applying plastic material in this way are already in existence and are used for sealing and reducing corrosion, which may otherwise take place within sewerage conduits. A modification to the machine will allow cables to run, be positioned and sandwiched between the conduit wall and the lining material as illustrated by cable 32, so that they are sealed by the same process used for conduit lining.

- Various entry and exit points for the cables are required. One method is shown in *Figure 4*, where a simple hole 41 is bored into the side of the conduit 40 where the cable 42 is to emerge and the cable is passed through a sealing grommet 43 of rubber, plastics or other suitable material.

- The second method is shown in *Figure 5* appropriate for the conduit section shown in *Figure 2*, in which the cable 23, 24 etc., is carried in the ducts 21 within the wall of the conduit 20. The ports 27 on the inside of the pipe may have replica ports 28 on the outside of the pipe at non-adjacent positions, so that the cable can enter or exit at the appropriate point. In order to prevent the emergence of the fluid passing through the pipe, it is necessary to fill the cavity at the exit point with a suitable sealant material 45,

such as Mastik (Registered Trade Mark) or another proprietary product. The internal ports 27 may be provided with removable seals, if desired, so as to allow periodic inspection to be effected.

5

## CLAIMS

1. A television transmission system in which cable is used for transmitting the television signals,  
10 and in which said cable is housed for at least part of its length inside one or more conduits of a sewerage system.
2. A transmission system according to Claim 1, in which said cable adheres to the inner wall of the  
15 conduit.
3. A transmission system according to Claim 1 or 2, in which said cable is laid in a channel in the wall of said conduit.
4. A transmission system according to Claim 1,  
20 in which said cable is suspended from the roof of the conduit.
5. A transmission system according to Claim 1, 2 or 3, in which the cable is placed under a sealing liner on the inner wall of said conduit.
- 25 6. A transmission system according to any preceding Claim in which said cable emerges from said conduit at desired points through sealed apertures in the conduit wall.
7. A transmission system according to any pre-  
30 ceding Claim wherein said cable is armoured to protect it from the corrosive action of the sewage.
8. A television transmission system substantially as any one of the examples herein described with reference to the accompanying drawings.

